



Homeland
Security



***RECOMMENDED FEDERAL GRANT GUIDANCE
EMERGENCY RESPONSE COMMUNICATIONS AND INTEROPERABILITY GRANTS
FISCAL YEAR (FY) 2007***



| | |
|---|----|
| 1. INTRODUCTION | 3 |
| 2. ELIGIBILITY | 4 |
| Section 2.1 – Eligible Applicants | 4 |
| Section 2.2 – Eligible Activities | 4 |
| 3. APPLICATION CRITERIA | 5 |
| Section 3.1 – Identify the Emergency Response Agency or Agencies for Which Funding Is Requested | 5 |
| Section 3.2 – Identify the Eligible Activity for Which Funding Is Requested | 5 |
| Section 3.3 – Describe How the Proposed Activity Will Improve Interoperability | 5 |
| Section 3.4 – Address How the Proposed Activity Will Adhere to the Criteria Set Forth for Each | 6 |
| Section 3.5 – Develop and Adopt a Statewide Plan for Communications Interoperability (<i>State Applicants Only</i>) | 6 |
| Section 3.6 – Share Information on Interoperability Solutions (<i>Block Grant Recipients Only</i>) | 6 |
| Section 3.7 – Demonstrate National Incident Management System (NIMS) Compliance | 7 |
| 4. PRINCIPLES AND GUIDELINES FOR ELIGIBLE ACTIVITIES | 8 |
| Section 4.1 – Planning and Management | 8 |
| Section 4.2 – Equipment Acquisition | 12 |
| Section 4.3 – Training and Exercises | 15 |
| 5. CRITERIA FOR STATEWIDE INTEROPERABILITY STRATEGIC PLANS | 17 |
| Section 5.1 – Purpose of Criteria | 17 |
| Section 5.2 – All-Inclusive Approach | 17 |
| Section 5.3 – Interoperability Continuum Framework | 18 |
| Section 5.4 – Criteria Checklist | 19 |
| APPENDIX | 23 |
| A – FUNCTIONAL REQUIREMENTS FOR COMMUNICATIONS EQUIPMENT | 24 |
| B – SAFECOM RESOURCES TO ASSIST INTEROPERABILITY ACTIVITIES | 28 |
| C – List of Recommended Criteria | 30 |
| D – GENERIC EXAMPLES OF LINKING DISPARATE EMERGENCY RESPONSE COMMUNICATIONS SYSTEMS | 33 |
| E – ADDITIONAL RESOURCES | 35 |
| F – FREQUENTLY ASKED QUESTIONS | 38 |



1. INTRODUCTION

Federal Fiscal Year (FY) 2007 Appropriations make available grant funding to enhance communications interoperability across the Nation. By definition, communications interoperability refers to the ability of emergency response agencies to talk across disciplines and jurisdictions via radio communications systems, to exchange voice and data with one another on demand, in real time, when needed, and as authorized. In an effort to coordinate the way in which funding is allocated and to maximize the prospects for interoperable communications, SAFECOM, a communications program of the Office of Interoperability and Compatibility has developed some recommended grant criteria in concert with representatives of the emergency response community. What follows is an outline of recommended grant funding eligibility (including applicants and activities), application criteria, guidelines, and resources to assist the emergency response community in strengthening interoperability. Frequently asked questions, which include information on the use of Internet Protocol (IP)-based equipment, can be found in Appendix F. Additional technical information on Project 25 standards can be found on the SAFECOM Web site (www.safecomprogram.gov/SAFE COM/grant/default.htm).

This guidance reflects a comprehensive approach to interoperability—one that understands that the problem of interoperability is not solely technological. In reality, technology is just one of several critical elements necessary for the development of a robust interoperability solution. As Secretary Chertoff explained at the May 8, 2006 Tactical Interoperable Communications Conference, "...the biggest barrier to interoperability is not technology...[the challenge] has to do with, rather, human beings. It has to do with how do we get people to be able to use this equipment in a way that makes interoperability not just a theoretical possibility, or a technological possibility, but an actual, workable, day-to-day solution."

Achieving effective interoperability across the Nation requires dedicating resources to improving such critical elements as governance, standard operating procedures, training and exercises, and regular use of interoperable capabilities. Further, it requires strong leadership in and among organizations—leadership that promotes and engages in extensive, coordinated, multi-jurisdictional, and multi-disciplinary planning efforts for interoperability. This guidance provides Federal grant programs with recommended criteria to ensure that the limited funding available for emergency response communications is used in a way that targets all of the critical elements mentioned above. In addition, it provides the emergency response community with guidance, tools, and resources for the development of interoperability solutions.



2. ELIGIBILITY

Section 2.1 – Eligible Applicants

Federal funds that are allocated for improving emergency response communications and interoperability should only be provided to emergency response agencies or organizations at the regional, state, local, or tribal level. They include:

- Emergency Medical Services (EMS) agencies
- Fire service agencies
- Law enforcement agencies
- An organization representing the above agencies
- Any emergency response agency listed as an eligible applicant in Federal grant programs that include this guidance

Section 2.2 – Eligible Activities

The following are the eligible activities for which Federal funding awarded for interoperable voice and/or data communications may be used, subject to the statutory authority of the grantor agency:

- **Planning and Management** activities, including:
 - Establishing a governance structure for emergency response interoperability projects
 - Conducting a capabilities assessment
 - Operational (standard operating procedures, training, usage)
 - Technical
 - Strategic planning
 - Operational (standard operating procedures, training, usage)
 - Technical
 - Implementation and management
- **Equipment Acquisition** for the purposes of:
 - Building emergency response communications systems
 - Upgrading/enhancing emergency response communication systems and equipment
 - Replacing emergency response communication systems and equipment
 - Maintaining emergency response communication systems and equipment
- **Training and Exercising** on the following:
 - Use of equipment and systems
 - Use of standard operating procedures

For more information on eligible activities, see Section 4.



3. APPLICATION CRITERIA

Section 3.1 – Identify the Emergency Response Agency or Agencies for Which Funding Is Requested

Identify the emergency response agency or agencies for which funding is requested, which should include:

- Type of agency (in accordance with eligible applicants defined in the previous section)
- Name of agency
- Location
- Level of government
- Regional planning involvement

Section 3.2 – Identify the Eligible Activity for Which Funding Is Requested

Identify the eligible activity or activities for which funding is requested. Eligible activities may include, subject to the statutory authority of the grantor agency:

- Planning and Management
- Equipment Acquisition
- Training and Exercising

Section 3.3 – Describe How the Proposed Activity Will Improve Interoperability

In order to receive funding, the applicant must be able to convey an understanding of the emergency responder needs and how the funded project might provide a clear path towards interoperability. Provide a summary that describes how any activity for which funding is requested will fit into an overall effort to increase interoperability. At a minimum, the summary should:

- Include information on the governance structure overseeing the effort, including membership, roles, and responsibilities; a needs assessment; a communications system plan; a deployment plan; operations, maintenance, and training plan; and a financial plan.
- Define the vision, goals, and objectives of the activity and how the proposed project would fit into an overall effort to increase interoperability.
- Describe the specific problems or needs that are to be addressed; where appropriate, applicants should include a description of how the proposed activity will address any deficiencies documented through prior grantor assessments (i.e., urban/metropolitan areas receiving DHS grant funds should ensure that their proposed activity will address areas of decreased capabilities documented in the FY 2006 Scorecard Assessment process).
- Identify any potential partners and their roles and staffing requirements, and provide information on any existing agreements such as a Memorandum of Understanding (MOU) or Mutual Response Agreement.
- Propose a detailed budget and timeline.



- Include an operational plan that addresses how the effort will be funded now and in the future.

Section 3.4 – Address How the Proposed Activity Will Adhere to the Criteria Set Forth for Each

Each eligible activity will have criteria which should be addressed. Section 4 details these criteria in the form of principles and guidelines. These can help ensure that applicants have both taken the needs of emergency responders and potential partners into account, and have considered short- and long-term goals. Applicants should demonstrate ways in which they will incorporate these principles and guidelines in performing their eligible activity, in addition to the information for the summary required in Section 3.3.

Section 3.5 – Develop and Adopt a Statewide Plan for Communications Interoperability (State Applicants Only)

This provision is recommended for Federal grant programs providing funding to states and is subject to the statutory authority of the grantor agencies.

All states are required under the FY 2007 Homeland Security Grant Program to develop and adopt statewide communications interoperability plans by December 2007. To further this process and ensure that all states are including the essential components of a statewide plan, criteria have been developed for such plans. The criteria are outlined in Section 5.

Section 3.6 – Share Information on Interoperability Solutions (Block Grant Recipients Only)

This provision is recommended for Federal grant programs providing block grant interoperable communications funding and is subject to the statutory authority of the grantor agencies.

To promote cross-jurisdictional coordination and information sharing, block grant recipients are encouraged to gather information regarding the amount of money received and the ways in which the funding is spent. Information to be gathered includes:

- The amount of funding received for communications interoperability
- The entity receiving the grant funding
- Additional jurisdictions involved in coordination
- The timeline for the grant funding
- The ways that the Federal funding is spent, including:
 - Planning
 - Training
 - Equipment
 - Exercises
 - Promoting routine follow-on usage



Section 3.7 – Demonstrate National Incident Management System (NIMS) Compliance

Homeland Security Presidential Directive (HSPD) 5 required the adoption of NIMS by all Federal departments and agencies. The directive also requires that Federal preparedness assistance funding for states, territories, local jurisdictions, and tribal entities depends on NIMS compliance. Information regarding the most recent compliance criteria is available at: http://www.fema.gov/emergency/nims/nims_compliance.shtm. FY 2007 grant applicants are encouraged if possible to demonstrate NIMS integration in their plans.

DHS created NIMS to provide a consistent nationwide approach for all levels of government to work together effectively and efficiently to prepare for, prevent, respond to, and recover from domestic incidents, regardless of cause, size, or complexity.

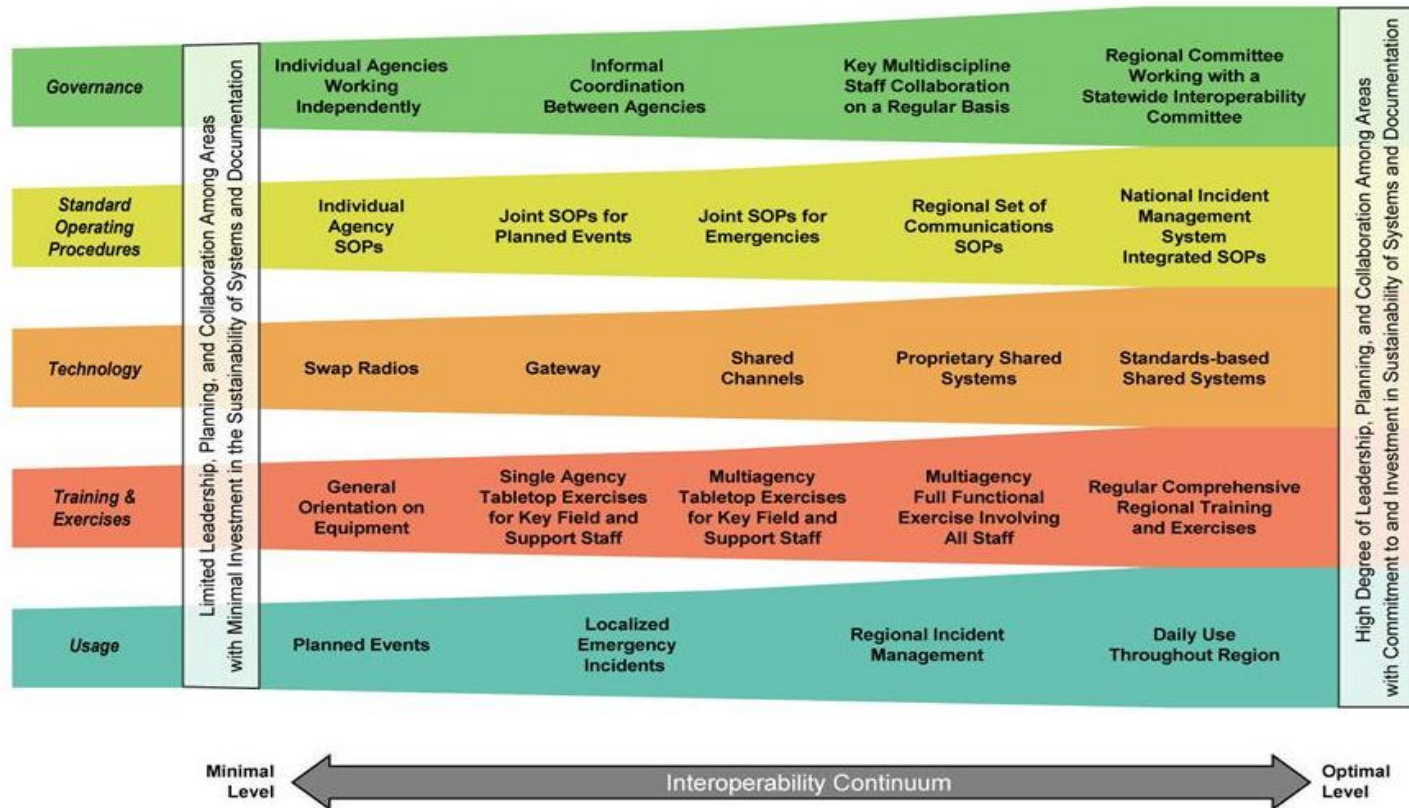


4. PRINCIPLES AND GUIDELINES FOR ELIGIBLE ACTIVITIES

Section 4.1 – Planning and Management

Federal funding is provided to applicants for planning activities related to interoperability. When planning for improved interoperability, a number of critical elements must be addressed. The Interoperability Continuum (Figure 1) depicts the critical elements for successful planning and implementation of a robust interoperability solution, including governance, standard operating procedures, technology, training/exercises, and usage of equipment. Applicants should demonstrate an understanding of this framework and the way in which each element is interdependent. For example, if an applicant proposes procurement of new equipment, the proposal should include plans for procedures, training, and exercises to ensure the best use of that equipment. More detailed information on the Interoperability Continuum can be found on the SAFECOM Web site at <http://www.safecomprogram.gov>.

Figure 1



In addition to incorporating an understanding of these five critical elements, planning activities in general should be conducted on a regional or statewide basis and take into account both short- and long-term goals. Once planning activities are established, consistent leadership and management are needed to oversee development, implementation, and maintenance of the interoperability projects.



Eligible Planning and Management Activities

Planning and management activities include establishing a governance structure, conducting capabilities assessments (for both operational and technical capabilities), strategic planning (for both operational and technical needs), and managing the implementation of a strategic plan (equipment acquisition, standard operating procedures (SOPs), and training development, etc.) After the governance structure is established, assessment, planning, and implementation should be carried out by the committee or working groups that are established as part of the structure.

Establishing a Governance Structure

Consistent leadership and management are needed to ensure that planning, equipment procurement, training, and funding are in place when developing an emergency response communications improvement or interoperability project. A common governing structure should improve the policies, processes, and procedures of any major project by enhancing communication, coordination, and cooperation, by establishing guidelines and principles, and by reducing any internal turf battles. This group should consist of local, tribal, state, and Federal entities as well as representatives from all pertinent emergency response disciplines. Frequently, when multiple agencies or jurisdictions are involved, this management structure takes the form of a governing body that makes decisions, solicits funding, and oversees the planning, implementation, and management of an interoperability initiative. When establishing a governance structure the following should be considered:

- Is the communications project consistent with similar efforts in the region?
 - Are agreements in place with other agencies or jurisdictions that illustrate cooperative management of the communications improvement or interoperability project?
- Does the project have the support of the relevant state or local governing authority and political leadership?
- What other funding sources has the applicant sought for the ongoing administrative costs of program management?
- Has a mechanism been established for future, sustained funding?

Capability Assessments

A common planning activity is the development of a capability assessment—a baseline understanding of existing resources. It is encouraged that capability assessments be developed by a discipline-neutral party to help ensure the assessment meets the needs of a multi-discipline/multi-jurisdiction response. For additional considerations on capability assessments, see sections below, Operational Considerations for Capability Assessments and Strategic Planning, and Technical Considerations for Capability Assessments and Strategic Planning.

Strategic Planning

When engaging in planning, nearby agencies or jurisdictions from other disciplines or other local, tribal, state, or Federal partners should be included. For those developing statewide strategic plans, specific criteria can be found in Section 5. The following questions should be considered for strategic planning in general:



- Who are the stakeholders that need to be involved in the planning?
- Which decision makers should be involved?
- What type of technical and field expertise will be needed to develop the plan?
- Will outside expertise be needed to develop this plan? If so, what kind?
- What are the roles and responsibilities of all agencies that are involved? (Include a list of partnering agencies.)
- Do mutual response agreements include interoperable communications?
- What type of governing structure exists to improve the processes for executing any planned project?

In addition to taking an inclusive approach, planning should take into account both short- and long-term goals. The following questions should be considered:

- What should be done in the first phase?
- How many phases will the plan require?
- How much time is needed to accomplish the plan?
- What are the technical solutions available to address the problem in the short- and long-term?
- What funding is available to address the problem in the short- and long-term?

Operational Considerations for Capability Assessments and Strategic Planning

Operational planning activities for emergency response communications projects may include SOPs, training and exercises, and regular use for the equipment. Planning for such activities should consider the communication needs and requirements of the emergency response community, including:

- With whom the agency or jurisdiction needs to communicate
- How the agency or jurisdiction needs to communicate
- What information needs to be exchanged
- When the agency or jurisdiction needs to communicate and exchange information (i.e., daily, weekly, infrequently)



- Under what circumstances the agency needs to communicate (i.e., during frequently occurring emergencies, major crimes or incidents, large-scale disasters)
- Whether regional communications applications are considered for daily use (i.e., mutual aid and regional coordinating centers)

Technical Considerations for Capability Assessments and Strategic Planning

Technical planning activities for emergency response communications projects may include such items as needs and requirements assessments, development of the system network architecture, propagation studies, and similar technical proposals.

The following list outlines items that should be included in planning for such activities:

- All interoperability resources available—including radio caches, gateways, shared channels, shared systems (including system type, mode, band, and manufacturer), and software and systems allowing for exchange of information across disciplines and jurisdictions (such as emergency management software, and computer-aided dispatch software)
- All agencies to which the interoperability resources are available
- Scale of the system—local, regional, multi-jurisdictional, statewide, or national
- Coverage—the system footprint of all areas covered
- Capacity—channel capacity and radio capacity within the existing systems
- Identification of capabilities by site including the identification of site users
- Current interoperability capabilities with other systems
- Compatibility with the Project 25 (P25) suite of standards (see Section 4.2 for additional information)
- For data-related systems, use of National Information Exchange Model (NIEM) Extensible Markup Language (XML) standards and Organization for the Advancement of Structured Information Standards (OASIS) Emergency Data Exchange Language (EDXL) standards in systems and software (see Section 4.2 for additional information)
- Internal and external security requirements in the architecture to secure information and maintain privacy levels for voice and data, as required by law



- Whether the infrastructure is shared with any other agency or organization and is owned or leased
- Whether equipment locations/sites are shared, owned, and/or leased
- Radio frequencies used to communicate with other emergency response agencies
- Channels designated solely for communicating with other agencies
- Types of equipment that can immediately be deployed to provide short-term solutions for improved communications
- Primary radio language used by the agency when communicating with other agencies or organizations (e.g., “plain” English or code)
- Type of topography or terrain in which the agency operates
- Types of structures in which the agency needs to communicate (e.g., tunnels or high-rise buildings)

Implementation and Management Considerations

Consistent leadership and management are needed to ensure that the planning, equipment procurement, training, and funding are in place when developing an emergency response communications improvement or interoperability project. Frequently, when multiple agencies or jurisdictions are involved, such management takes the form of a governing body that makes decisions, solicits funding, and oversees the implementation of an interoperability initiative. Activities during implementation and management may include but are not limited to procurement of equipment, development of SOPs, and coordination of training and exercises. Organizations that govern such projects must be comprised of the relevant law enforcement, fire response, and emergency agencies.

Section 4.2 – Equipment Acquisition

Communications systems and equipment are expensive and technically complex. Before a procurement decision is made, organizations must conduct an assessment of the current communications system capabilities, as outlined in the previous section, and select a technology that best meets their need. Funds can be directed at the improvement of existing systems, where applicable, rather than at the development of completely new systems or infrastructure using proprietary or non-proprietary equipment (see FAQs for further clarification).

Fund requests should not be limited to the purchase of new radios. Grant applicants are also encouraged to pursue current and next generation interoperability solutions, such as gateways and backbone technologies that connect existing radio systems. These technologies may include, but are not limited to, Internet Protocol (IP) based solutions. These solutions may provide interim or long-term interoperability capabilities that obviate the need for new equipment or systems, and their implementation should not require the acquisition of new, non-P25 systems. Absent



compelling reasons for using other solutions, communities considering new radio or system acquisitions are expected to migrate to P25-compliant equipment.

Grant funding in regards to systems and equipment may be used for:

- Building emergency response communications systems and equipment
- Upgrading or enhancing emergency response communication systems and equipment to include the procurement of interoperable solutions
- Replacing emergency response communication systems and equipment
- Maintaining emergency response communication systems and equipment

Applicants requesting funding for equipment acquisition should consider the principles and guidelines discussed in the following sections.

Priority Areas

Before making equipment acquisition decisions, applicants should ensure that they meet two basic communications needs—operability and incident-level capabilities. If applicants have not met these needs in their jurisdiction, they should make equipment acquisitions to meet them first, subject to the statutory authority of the grantor agency or the objectives of the grant program if the applicant is seeking Federal grant funding.

Operability. The first priority of Federal funding for improving emergency response communications is to provide within an organization basic, operable communications that has safety as the overriding consideration.

Incident-Level Communications Capabilities. Agencies are encouraged to consider plans that enable them to achieve, at a minimum, incident-level interoperability. This means ensuring the ability of incident operations section staff to adequately communicate with one another and their respective command centers within one hour of an incident. Agencies are encouraged to explore any and all inexpensive and innovate ways to ensure incident-level interoperability. While such incident management interoperability can provide an interim solution to an area's interoperability needs, such solutions should always be in support of long-term interoperability by building upon or accelerating long-term strategies and efforts.

Standards

Land Mobile Radio (LMR) Systems

When procuring equipment for communication system development and expansion, a standards-based approach should be used to begin migration to multi-jurisdictional and multi-disciplinary interoperability. Specifically, all new digital voice systems should be compliant with the Project 25 (P25) suite of standards. This recommendation is intended for government-owned or -leased digital land mobile public safety radio equipment. Its purpose is to make sure that such equipment or systems are capable of interoperating with other digital emergency response land mobile equipment or systems. It is not intended to apply to commercial services that offer other types of interoperability solutions. Further, it does not exclude any application if the application demonstrates that the system or equipment being proposed will lead to enhanced interoperability.

With input from the user community, these standards have been developed to allow for backward compatibility with existing digital and analog systems and to provide for interoperability in future



systems. The FCC has chosen the P25 suite of standards for voice and low-to-moderate speed data interoperability in the new nationwide 700 MHz frequency band and the Integrated Wireless Network (IWN) of the U.S. Homeland Security, Justice, and Treasury Departments has chosen the P25 suite of standards for their new radio equipment. The U.S. Department of Defense has also endorsed P25 for new LMR (Land Mobile Radio) systems.

This guidance does not preclude funding of non-P25 equipment when there are compelling reasons for using other solutions. However, the first priority of federal funding (subject to the statutory authority of the grantor agency or the objectives of the grant program if the applicant is seeking Federal grant funding) for improving public safety communications is to provide basic, operable communications within a department with safety as the overriding consideration. Funding requests by agencies to replace or add radio equipment to an existing non-P25 system (i.e., procurement of new portables on an existing analog system) will be considered if there is an explanation as to how their radio selection will allow for improving interoperability or eventual migration to interoperable systems. Absent these compelling reasons, SAFE COM intends that P25 equipment will be preferred for LMR systems to which the standard applies.

Beginning in FY 2007 grant applicants purchasing P25 equipment must obtain documented evidence from the manufacturer that the equipment has been tested to and passed all of the applicable, published, normative P25 compliance assessment test procedures for performance, conformance, and interoperability as defined in the "Grant Guidance – Project 25 Explanatory Addenda," which can be found at www.safecomprogram.gov/SAFE COM/grant/default.htm. Applicable test procedures include tests of all mandatory features and standard options installed in the product contemplated for purchase. This documentation shall be in the form of a Supplier's Declaration of Compliance (SDoC) prepared in accordance with ISO/IEC 17050-1. Further, the relevant compliance assessment test reports which form the basis for the SDoC shall be prepared in accordance with the NIST publication: "Procedures and General Requirements for Compliance Assessment of Project 25 Land Mobile Radio Equipment."

Data-Related Information Sharing Systems

To support homeland security, emergency responses, and justice information sharing, grant applicants should use the latest NIEM specifications and guidelines on the use of XML, as follows:

- Use NIEM 1.0 or later for information sharing in production systems. NIEM 1.0 (beta) was released in June 2006; the full production version is scheduled for October 2006.
- Until the production release of NIEM 1.0, the latest NIEM beta specifications and guidance should be used only for pilots and prototype systems.

Additional information about the required use of NIEM specifications and guidelines is available at <http://www.niem.gov>. If there is any question or comment about the use of NIEM specifications and guidelines, please submit it to information@niem.gov.

Further, any systems, developmental activities, or services procured with grant funding involving information relating to emergency response, including the exchange of incident management or alerts, should comply with the OASIS EDXL standards. Compliance should include the Common Alerting Protocol (CAP), version 1.1 or latest version, and the EDXL Distribution Element (DE), version 1.0 or latest version. More information on these standards can be found at www.oasis-open.org.



This guidance does not preclude funding of non-NIEM or non-OASIS EDXL-compliant systems, when there are compelling reasons for using other solutions. Absent such compelling reasons, the NIEM and OASIS EDXL standards identified above are the preferred standards.

Functional Requirements

When planning for the development of communications systems and looking to ensure both operability and interoperability, emergency responders should employ a standards-based network of networks approach. When procuring voice and data communications equipment, emergency responders should seek equipment that supports specific functional requirements, or equipment capabilities. A list of functional requirements for various components of voice and data communications systems is included in Appendix A. These requirements outline the minimum capabilities that equipment should have for effective interoperable procurement selections.

Section 4.3 – Training and Exercises

To use equipment properly and effectively in emergencies, personnel must be trained through joint exercises that allow them to practice SOPs, become familiar with the equipment, and enhance their preparedness in responding to all types of emergencies. Eligible grant applicants should include multi-disciplinary and multi-jurisdictional training in their overall emergency response communications plans.

Consider the following topics in the development of training and exercise plans:

- Participation from all levels and functions of emergency response (i.e., local, state, Federal, fire, law enforcement, emergency medical services)
- The frequency of training
- Who will conduct the training
- The site at which training will be held (on-site or specified training facility)
- Maintenance efforts to keep personnel up-to-date with changes in procedure, equipment functions, or other relevant policies
- Incorporating lessons learned from training exercises in operational procedures
- Implementing post-exercise evaluations and analyses

No matter the level of management, planning, technology, SOPs, and training that an agency adopts, interoperability solutions must be routinely in training and in daily use so that agency staff becomes and remains familiar with the equipment and procedures. Emergency response personnel in high-stress situations depend on using equipment and procedures with which they are familiar and comfortable. Unless both operable and interoperable communications solutions are used as part of routine, daily operations, as applicable, they will not be used during major incidents. As with an agency's general staff, its supervisors and command staff must likewise be familiar with the equipment and protocols required to use the various communications solutions



Homeland
Security



that are available to the agency if they are going to direct its activation. The best way to bring about such familiarity is daily use of and training with the solutions and their related equipment.



5. CRITERIA FOR STATEWIDE INTEROPERABILITY STRATEGIC PLANS

Section 5.1 – Purpose of Criteria

According to Section I.C.5 of the 2006 Homeland Security Grant Program, all states are required by December 2007 to develop and adopt statewide communications interoperability plans. As defined in the Homeland Security Act of 2002, the term “state” means, “any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and any possession of the United States.” To assist this process and to ensure all states include the essential components of a statewide plan, the criteria of what must be included in the communications interoperability plan have been developed. The criteria were formulated with input from local and state practitioners. The sections below outline the criteria.

Section 5.2 – All-Inclusive Approach

The Department of Homeland Security (DHS) requires that all grant recipients submit by the end of 2007 a statewide communications interoperability plan. The SAFECOM program within the DHS Science and Technology Directorate recommends that states, through their governors, other state and local policy makers, and local emergency responders, use a statewide strategic planning process that gathers the perspectives of all emergency responders. By using a practitioner-driven approach that involves local, tribal, state, and Federal stakeholders, a strategic plan will be developed to meet the needs of end users. They are therefore more likely to adopt such a plan.

The criteria for the statewide plan provide an opportunity for partnership among local, tribal, state and Federal entities. Each has a critical role to play in the development of a strong statewide, locally driven interoperability plan that has the best chance of success for improving interoperability. The governor’s office, or its designee, should act as an umbrella organization that plays a vital role in leadership, coordination, management, and support for the statewide planning process. Local jurisdictions play an equally important, but different, role in further developing the interoperability within their region, identifying ways to build out their current systems to become interoperable with the neighboring jurisdictions, and providing significant input into the development of the statewide plan that builds on efforts already underway.

Ideally, each state will have an interdisciplinary policy committee, comprised of representatives from the governor’s office and key state and local agencies. If a state has already established an interdisciplinary, inter-jurisdictional communications interoperability committee with significant local representation, it is encouraged to use this existing governance structure. If not, it is encouraged to develop one. This is the committee that would be responsible for developing and putting into practice the statewide plan.

The communications interoperability committee would likely include representatives from:

- Governor’s office
- State and local elected officials
- State and local emergency medical services
- State and local health officials
- State and local fire response services
- State and local law enforcement

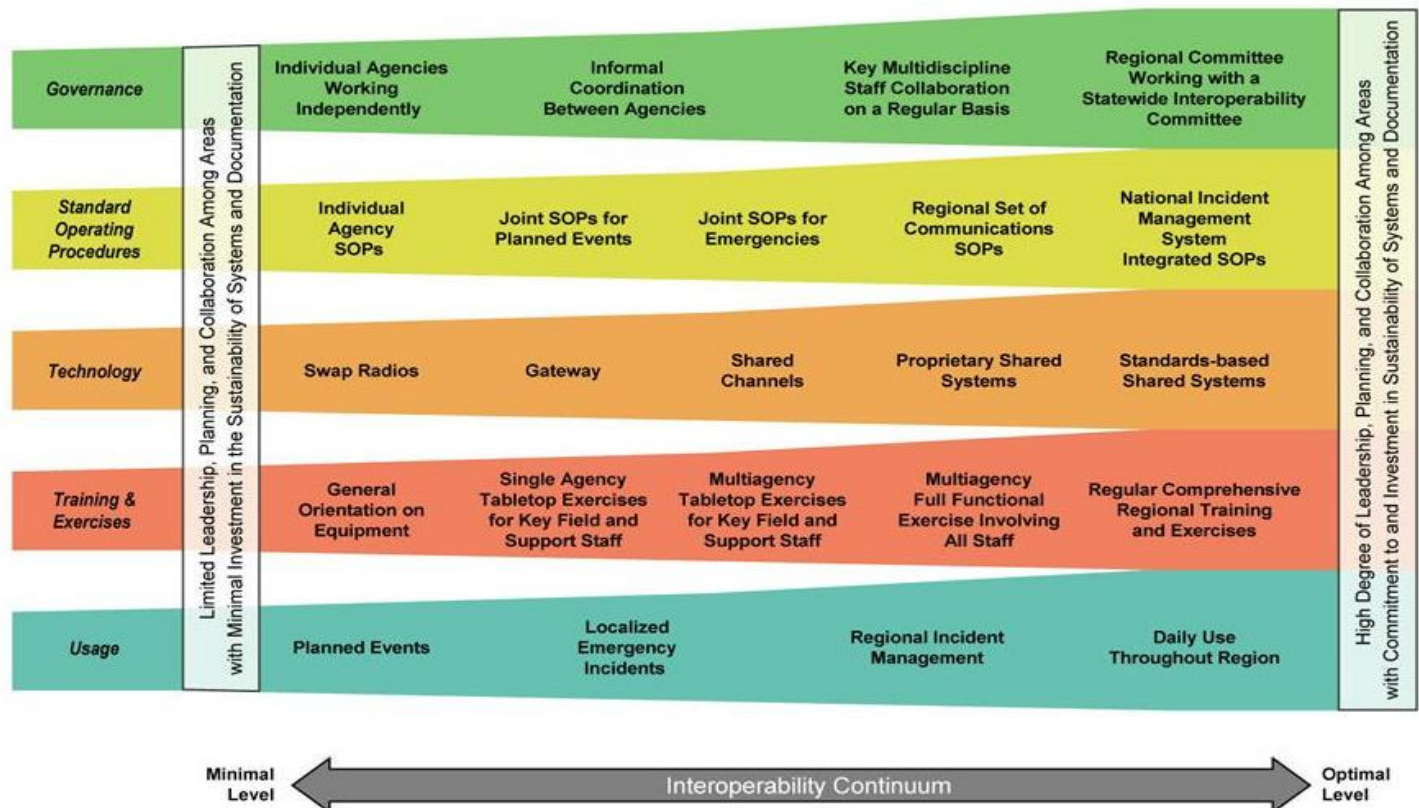


- State and local emergency management
- State and local homeland security offices
- State and local transportation agencies
- Tribal governments
- Military organizations operating in the state (DoD, National Guard, etc.)
- Federal agencies that need to be interoperable with state and local emergency responders
- Urban Areas Security Initiative (UASI)
- Critical infrastructure
- Other non-government organizations, such as the Red Cross and utility companies
- Other organizations with abilities and resources for prevention of or response and recovery from crises or disasters
- Regional planning committee chairpersons for 700 and 800 MHz

In keeping with the relevant state and local laws and regulations, some representatives may need to serve in an *ex officio* role.

Section 5.3 – Interoperability Continuum Framework

SAFE COM recommends applying its Interoperability Continuum, shown below, as a comprehensive framework to address critical elements for planning and implementing statewide interoperability solutions. These elements include governance, standard operating procedures, technology, training and exercises, and usage of interoperable communications.





Section 5.4 – Criteria Checklist

A detailed criteria checklist is provided in the table below.

| 1. Background and Preliminary Steps | |
|-------------------------------------|---|
| <input type="checkbox"/> | 1.1. Provide an overview and background information on the state and its regions. Include geographic and demographic information. |
| <input type="checkbox"/> | 1.2. List all agencies and organizations that participated in developing the plan. (List them according to the categories recommended for a communications interoperability committee in the All-Inclusive Approach section above.) |
| <input type="checkbox"/> | 1.3. Identify the point of contact. DHS expects that each state will have a full time interoperability coordinator. The coordinator should not represent or be affiliated with any one particular agency and should not have to balance the coordinator duties with other responsibilities. |
| <input type="checkbox"/> | 1.4. Describe the communications and interoperability environment of the current emergency response effort. |
| <input type="checkbox"/> | 1.5. Include a problem definition and possible solutions that addresses the challenges identified in achieving interoperability within the SAFECOM Interoperability Continuum. |
| <input type="checkbox"/> | 1.6. Identify any Tactical Interoperability Communications Plans in the state. |
| <input type="checkbox"/> | 1.7. Set the scope and timeframe of the plan. |
| 2. Strategy | |
| <input type="checkbox"/> | 2.1. Describe the strategic vision, goals, and objectives for improving emergency response interagency wireless communications statewide, including how they connect with existing plans within the state. |
| <input type="checkbox"/> | 2.2. Provide a strategic plan for coordination with neighboring states. If applicable, include a plan for coordination with neighboring countries. |
| <input type="checkbox"/> | 2.3. Provide a strategic plan for addressing data interoperability in addition to voice interoperability. |
| <input type="checkbox"/> | 2.4. Describe a strategy for addressing catastrophic loss of communication assets by developing redundancies in the communications interoperability plan. |
| <input type="checkbox"/> | 2.5. Describe how the plan is, or will become, compliant with the National Incident Management System (NIMS) and the National Response Plan. |



| | |
|--------------------------|--|
| <input type="checkbox"/> | 2.6. Describe a strategy for addressing communications interoperability with the safety and security elements of the major transit systems, intercity bus service providers, ports, and passenger rail operations within the state. |
| <input type="checkbox"/> | 2.7. Describe the process for periodic review and revision of the state plan. |
| 3. Methodology | |
| <input type="checkbox"/> | 3.1. Describe the method by which multi-jurisdictional, multi-disciplinary input was provided from all regions of the state. For an example of a methodology that ensures input from all regions, see the Statewide Communication Interoperability Plan, or SCIP, methodology developed by SAFE COM. |
| <input type="checkbox"/> | 3.2. Define the process for continuing to have local input and for building local support of the plan. |
| <input type="checkbox"/> | 3.3. Define how the TICPs were incorporated into the statewide plan. |
| <input type="checkbox"/> | 3.4. Describe the strategy for implementing all components of the statewide plan. |
| 4. Governance | |
| <input type="checkbox"/> | 4.1. Identify the executive or legislative authority for the governing body of the interoperability effort. |
| <input type="checkbox"/> | 4.2. Provide an overview of the governance structure that will oversee development and implementation of the plan. Illustrate how it is representative of all of the relevant emergency response disciplines and regions in the state. |
| <input type="checkbox"/> | 4.3. Provide the charter for the governing body, and use the charter to state the principles, roles, responsibilities, and processes. |
| <input type="checkbox"/> | 4.4. Identify the members of the governing body and any of its committees. (List them according to the categories recommended for a communications interoperability committee in the All-Inclusive Approach section above.) |
| <input type="checkbox"/> | 4.5. Provide a meeting schedule for the governing body. |
| <input type="checkbox"/> | 4.6. Describe multi-jurisdictional, multi-disciplinary agreements needed for decision-making and for sharing resources. |
| 5. Technology | |
| <input type="checkbox"/> | 5.1. Include a statewide capabilities assessment (or a plan for one) which includes, critical communications equipment and related interoperability issues. At a minimum this should include types of radio systems, data and incident management systems, the manufacturer, and frequency assignments for each major emergency responder organization within the state. Ultimately more detailed information will be required to complete the |



| | |
|--|--|
| | documentation of a migration strategy. States may use the Communications Asset Survey and Mapping (CASM) tool to conduct this assessment. |
| <input type="checkbox"/> | 5.2. Describe plans for continuing support of legacy systems, and developing interfaces among disparate systems, while migrating to newer technologies. |
| <input type="checkbox"/> | 5.2.1. Describe the migration plan for moving from existing technologies to newly procured technologies. |
| <input type="checkbox"/> | 5.2.2. Describe the process that will be used to ensure that new purchases comply with the statewide plan, while generally allowing existing equipment to serve out its useful life. |
| 6. Standard Operating Procedures (SOPs) | |
| <input type="checkbox"/> | 6.1. Include an assessment of current local, regional, and state operating procedures which support interoperability. |
| <input type="checkbox"/> | 6.2. Define the process by which the state, regions, and localities will develop, manage, maintain, upgrade, and communicate standard operating procedures (SOPs), as appropriate. |
| <input type="checkbox"/> | 6.3. Identify the agencies included in the development of the SOPs, and the agencies expected to comply with the SOPs. |
| <input type="checkbox"/> | 6.4. Demonstrate how the SOPs are NIMS-compliant in terms of the Incident Command System (ICS) and preparedness. |
| 7. Training and Exercises | |
| <input type="checkbox"/> | 7.1. Define the process by which the state will develop, manage, maintain and upgrade, or coordinate as appropriate, a statewide training and exercises program. |
| <input type="checkbox"/> | 7.2. Describe the process for offering and requiring training and exercises, as well as any certification that will be needed. |
| <input type="checkbox"/> | 7.3. Explain how the process ensures that training is cross-disciplinary. |
| 8. Usage | |
| <input type="checkbox"/> | 8.1. Describe the plan for ensuring regular usage of the relevant equipment and the SOPs needed to improve interoperability. |
| 9. Funding | |
| <input type="checkbox"/> | 9.1. Identify committed sources of funding, or the process for identifying and securing short- and long-term funding. |



| | |
|---------------------------|--|
| <input type="checkbox"/> | 9.2. Include a plan for the development of a comprehensive funding strategy. The plan should include a process for identifying ongoing funding sources, anticipated costs, and resources needed for project management and leveraging active projects. |
| 10. Implementation | |
| <input type="checkbox"/> | 10.1. Describe the prioritized action plan with short- and long-term goals for achieving the objectives. |
| <input type="checkbox"/> | 10.2. Describe the performance measures that will allow policy makers to track the progress and success of initiatives. |
| <input type="checkbox"/> | 10.3. Describe the plan for educating policy makers and practitioners on interoperability goals and initiatives. |
| <input type="checkbox"/> | 10.4. Describe the roles and opportunities for involvement of all agencies in the implementation of the statewide plan. |
| <input type="checkbox"/> | 10.5. Establish a plan for identifying, developing, and overseeing operational requirements, SOPs, training, technical solutions, and short- and long-term funding sources. |
| <input type="checkbox"/> | 10.6. Identify a POC responsible for implementing the plan. |
| <input type="checkbox"/> | 10.7. Describe critical success factors for implementation of the plan. |

The criteria for the statewide plan provide an opportunity for partnership regarding improved interoperability among local, tribal, state and Federal entities. Each has a critical role to play in the development of a strong statewide, locally driven interoperability plan that has the best chance of success for improving interoperability. By using a practitioner-driven approach that involves all of these stakeholders, a strategic plan can be developed to meet the needs of end users, who will therefore also be more likely to adopt the plan.



Homeland
Security



APPENDIX



A – FUNCTIONAL REQUIREMENTS FOR COMMUNICATIONS EQUIPMENT

For Voice, All Equipment Should—

- Support one-to-many and one-to-one communications
- Adhere to standards based architectures; devices should be interchangeable across different vendors.
- Allow for multiple frequency bands and architectures (e.g., conventional, trunked, hybrid, analog, digital).
- Allow feature interoperability across different vendors “out of the box”.
- Protect the security of voice and data communications transmissions of emergency responders to the maximum extent possible, while realizing that in a real-time emergency, this is not the emergency response community’s primary concern.
- Support key mission critical features:
 - Support a system-wide panic button and alerts.
 - Support device- or user-specific identification and device information displays.
 - Be equipped with location technology.

For Voice, User Devices Should—

- Provide a battery life that can operate longer than a typical shift before requiring recharging (i.e., longer than 10 hours)
- Have a form factor that:
 - Has ruggedized casing.
 - Supports intuitive displays and functions similar to common devices such as cellular phones and LMR subscriber units.
- Support fixed or vehicular configuration and installation.
- Support mobile communications from common emergency response vehicles, including motor vehicles, helicopters, marine craft, and small planes.
- Support enhanced emergency response services such as priority service and E-911.

For Voice, Infrastructure Should—

- Communicate in as many locations of operation as possible (e.g., in-building and wide area coverage).
- Allow for adjustments:



- Allow readjustment of the range and area of horizontal and vertical coverage.
- Support seamless and continuous communications when users roam between connected networks and adjacent coverage areas.
- Provide flexible features useful during an emergency response:
 - Have sufficient backup power sources to support sustained operations during loss of power.
 - Provide extra capacity for an emergency situation.
 - Provide system administration capabilities that are flexible and allow communications personnel to adjust various operating parameters.
 - Allow organizations the ability to establish specific user groups and networks for both preplanned and “on the fly” mutual aid.
- To enable command and control, allow for communications with various types of user devices (e.g., LMR subscriber units, pagers, cell phones, satellite phones).
- Ensure the identity of the user and the device on the network.
- Support minimal performance requirements
 - Mouth-to-ear delay of less than 200 ms.
 - Call setup time of less than 250 ms.
 - Immediate detection of critical failure of communications link, device, or function.

For Voice, Dispatch Equipment Should—

- Support monitoring and recording of voice traffic.
- Support interfacing with user devices and dispatchers on other systems.
- Support operations during power outages.
- Support flexible architectures that meet the majority of dispatch center configurations:
 - Support different levels of operator access.
 - Support centralized and remote usage and management.
 - Be able to provide customized user interfaces.
- Be able to interface with external applications (e.g., doors, alarms, sirens).
- Allow dispatchers to page unattended devices and allow users to see who paged them.

For Voice, Interoperability Solutions Should—

- Support voice communications links between disparate systems:
 - Local, state, Federal, and DoD emergency responders



- Commonly available communications system platforms (e.g., conventional and trunked LMR systems, multiple manufacturers, disparate frequency bands (i.e., VHF, UHF, 700 MHz, 800 MHz)
- Unencrypted, analog audio
- Hardware and software definable links
- At least seven simultaneous two-way linkages between systems
- Provide immediate availability of interoperability to users:
 - Require users in the field to carry no additional equipment beyond their normally assigned subscriber units.
 - Provide the capability to have always on, immediately available user communications links without the intervention of dispatch personnel.
- Support minimal level of communications delays between systems (i.e., less than 250 ms delay and allowing for buffering of audio to reduce these delays).
- Be easily configurable:
 - Have a Graphical User Interface (GUI) that is computer-based.
 - Take less than five seconds to execute technical steps to configure links
 - Allow for distributed control between dispatch centers.
- Provide ease of use with existing equipment:
 - Interface with existing equipment.
 - No adverse impacts on existing equipment.
 - Support of multiple technologies (e.g., leased lines, fiber, RF) to link communication systems.
- Deployable solutions should provide ease of use when used at an incident scene:
 - Capable of being transported to the scene of an incident via typical emergency response vehicles.
 - Capable of linking users on an ad-hoc basis using user devices that responding agencies bring onto scene.
 - Capable of being used in conjunction with cached user devices.

For Data, All Equipment Should—

- Support general data requirements:
 - Able to withstand harsh environments (e.g., casing of the device that is water-resistant, high-heat-resistant and rugged).
 - Adhere to industry guidelines on security configurations for operating systems and applications.
 - Use standardized technology that supports industry data protocols and that will interface directly with “off-the-shelf” laptops, hand-held computers, and personal digital assistants (PDAs).
 - Authenticate and authorize the devices with little or no interaction by personnel.
 - Provide seamless roaming and transfer between device types (cellular, satellite, WAN, LAN, WiMax, etc.)
 - Support current and pending locator technologies.



- Support resources, patient, and victim tracking technologies.
- Support database queries and messaging:
 - Ability of incident commander to query real-time status of all users involved in the incident, including personnel, equipment, and vehicles.
 - Accessing and retrieving query results from Federal, state, local, and commercial databases.
 - Sending and receiving text and short messages.
 - Sending and receiving instant messages.
 - Sending, receiving, and downloading email messages with attachments.
 - Bulk file transfer (e.g., images, GIS overlays, building floor plans).
 - Devices capable of being used as wireless modems.
- Provide locating capabilities:
 - Support of two-dimensional and three-dimensional location technologies.
 - Devices capable of initiating an automated transmission to other users based on location information.
- Support full range of video transmission, from passive video (e.g., still photographs) to full-motion video:
 - Support video telephony.
 - Provide a minimum of 256 Kbps bi-directional bandwidth for video conferencing.



B – SAFECOM RESOURCES TO ASSIST INTEROPERABILITY ACTIVITIES

Based on practitioner input, the SAFECOM Program has developed guidance, tools, and templates on communications-related issues to assist local, tribal, state, and Federal emergency response agencies strengthen their interoperability efforts. A list of these resources is provided below. Each of these tools can be accessed at <https://www.safecomprogram.gov>.

Interoperability Continuum: Designed to help the emergency response community and local, tribal, state, and Federal policy makers address critical elements for success as they plan and implement interoperability solutions. These elements include governance, SOPs, technology, training and exercises, and usage of interoperable communications.

Operational Guide for the Interoperability Continuum—Lessons Learned from RapidCom: Documents Lessons Learned from RapidCom—an effort that improved command level interoperability in ten high-threat urban areas—and lists key actions that practitioners should consider for each element of the Interoperability Continuum.

Statewide Communications Interoperability Planning (SCIP) Methodology: Based on lessons learned from the Virginia planning process, SAFECOM released the SCIP Methodology for integrating practitioner input into a successful statewide strategic plan.

Writing Guide for a Memorandum of Understanding (MOU): Provides questions to consider and example text to assist practitioners with the creation of an MOU between agencies or jurisdictions for the governance of an interoperability effort.

Creating a Charter for a Multi-Agency Interoperability Committee: Template and Questions to Consider: Provides questions to consider and example text to assist practitioners with the creation of a charter for a multi-agency communications interoperability committee.

Writing Guide for Standard Operating Procedures (SOP): Provides questions to consider and example text to assist practitioners with the creation of SOPs relating to an enhanced communications capability.

Improving Interoperability through Shared Channels v1: Helps state and local interoperability coordinators with the difficult task of creating a regional channel plan for interoperability. An effective regional channel plan can provide interim interoperability using existing resources until long-term solutions are put into place.

General Guidance and Recommendations for Interoperability-Related Governance: This document provides emergency responders and public officials with an explanation of why sound governance is important. It explains some common barriers to setting up governance structures; the role of governance in achieving communications interoperability; characteristics of successful governance models and effective bylaws, and examples of roles and responsibilities. The guidance document also includes a discussion of performance measures, methods used, and lessons learned by some communities as they developed their governance models.



Enhancing Statewide Communications Interoperability: SAFECOM Assessment and Recommendations on the Status of Governance in the State of Nevada: This document provides a set of recommendations to the State of Nevada on mechanisms to modify its governance model and improve communications interoperability. The recommendations will help Nevada implement its statewide communications interoperability plan. The SAFECOM program developed the document through work with the Nevada Communications Steering Committee, which is charged with developing the statewide communications plan, and local practitioners and policy makers throughout the state. The SAFECOM program will leverage the experience gained from developing the Nevada governance recommendations in case studies and models that can be used nationwide.

Public Safety Architecture Framework (PSAF) Volumes I and II: These documents assist emergency response agencies in mapping system requirements and identifying system gaps.

Statement of Requirements (SoR) Volume I, v1.0 and v1.1: This statement defines future requirements for crucial voice and data communications in day-to-day, task force, and mutual aid operations. The SoR helps the emergency response community convey a shared vision that ultimately will help private industry better align research and development efforts with critical interoperable communication needs. The SoR provides specifications to manufacturers and enables them to build equipment that meets emergency responders' communications needs.

SAFECOM Technology Initiatives Brochure: This guide describes the SAFECOM technical initiatives such as the SOR and PSAF and explains how practitioners are impacted based on their role (i.e., emergency responders, state or local interoperability coordinator, political leadership, industry, etc.).



C – List of Recommended Criteria

The following table summarizes the recommended criteria contained within this document. This list is designed as a quick reference guide for Federal grant programs and grant applicants seeking to quickly understand the criteria recommended by the guidance document. *This table is not intended for use by grant applicants in applying for Federal grant funding as each Federal grant agency has its own application forms.*

| | |
|---|---|
| 1. Eligible applicants: Federal funds that are allocated for improving public safety communications and interoperability are available to public safety agencies or organizations at the regional, state, local, or tribal level, including: | |
| <input checked="" type="checkbox"/> | Emergency Medical Service agency |
| <input checked="" type="checkbox"/> | Fire Service agency |
| <input checked="" type="checkbox"/> | Law Enforcement agency |
| <input checked="" type="checkbox"/> | An organization representing the aforementioned agencies |
| <input checked="" type="checkbox"/> | Any emergency response agency listed as an eligible applicant in Federal grant programs that include this guidance |
| 2. Eligible activities: The following are the eligible activities for which Federal funding that is awarded for interoperable communications may be used, subject to the statutory authority of the grantor agency: | |
| <input checked="" type="checkbox"/> | Planning and Management |
| <input checked="" type="checkbox"/> | Equipment Acquisition |
| <input checked="" type="checkbox"/> | Training/Exercises |
| 3. Demonstrate how the proposed activity will improve interoperability: To receive funding, the applicant must be able to convey an understanding of the first responder's needs and a clear path towards interoperability. Provide a summary that describes how the activity or activities for which funding is requested will fit into an overall effort to increase interoperability. At a minimum, the summary should: | |
| <input checked="" type="checkbox"/> | Identify the activity or activities for which funding is requested, using categories listed in the eligible activities section. |
| <input checked="" type="checkbox"/> | Define the vision, goals, and objectives of what is to be accomplished and how the proposed effort would fit in an overall effort to increase interoperability. |



| | |
|--|---|
| <input checked="" type="checkbox"/> | Describe the specific problems or needs that are to be addressed. |
| <input checked="" type="checkbox"/> | Identify any potential partners and their roles and staffing requirements, and provide information on any existing agreements such as a Memorandum of Understanding (MOU) or Mutual Response Agreement. |
| <input checked="" type="checkbox"/> | Propose a detailed budget and timeline. |
| <input checked="" type="checkbox"/> | Include an operational plan that addresses how the effort will be funded now and in the future. |
| <input checked="" type="checkbox"/> | Describe the governance structure in place that will lead the proposed project, including membership, roles, and responsibilities. |
| 4. Describe how the proposed activity, subject to the statutory authority of the grantor agency, will incorporate the principles and guidelines outlined in Section 4: | |
| <input checked="" type="checkbox"/> | If applying for funding to perform planning and management activities, address the principles and guidelines outlined in Section 4.1. |
| <input checked="" type="checkbox"/> | If applying for funding to perform equipment acquisition, address the principles and guidelines outlined in Section 4.2. |
| <input checked="" type="checkbox"/> | If applying for funding to perform training and exercise activities, address the principles and guidelines outlined in Section 4.3. |
| 5. Develop and adopt a statewide plan for interoperability (<i>State Applicants Only</i>—subject to the statutory authority of the grantor agency): | |
| <input checked="" type="checkbox"/> | Adhere to the criteria for statewide plans outlined in Section 5 |
| 6. Share Information on interoperability solutions, including, the items below (<i>Block Grant Recipients Only</i>—subject to the statutory authority of the grantor agency): | |
| <input checked="" type="checkbox"/> | The amount of funding received for communications interoperability |
| <input checked="" type="checkbox"/> | The organization receiving the grant funding |
| <input checked="" type="checkbox"/> | Additional jurisdictions involved in coordination |
| <input checked="" type="checkbox"/> | The timeline for the grant funding |



| | |
|--|---|
| <input checked="" type="checkbox"/> | The ways that the Federal funding will be spent |
| 7. Demonstrate National Incident Management System (NIMS) compliance: | |
| <input checked="" type="checkbox"/> | Demonstrate NIMS compliance based on the most recent compliance criteria available at http://www.fema.gov/emergency/nims/nims_compliance.shtm |



D – GENERIC EXAMPLES OF LINKING DISPARATE EMERGENCY RESPONSE COMMUNICATIONS SYSTEMS

Multiple approaches exist for linking disparate networks. Descriptions of common technologies are provided below.

Cross-Band/In-band Repeater Gateways

Although there are more robust solutions available today, repeaters still provide improved interoperability for agencies needing to link disparate systems.

Cross-band/in-band repeater gateways instantly retransmit signals input from one channel or system to another. These may be in the same or a different frequency band. Cross-band repeaters range from simple devices supporting frequency transfers across two bands (e.g., ultra high frequency (UHF) and very high frequency (VHF), to more complex devices capable of bridging multiple frequency bands (e.g., UHF, VHF Low Band, VHF High Band, and 800 MHz). Within minutes after arriving on the scene of an incident, a portable gateway can be quickly programmed to support the frequencies of participating agency radios. Some of these solutions also allow access to disparate systems via Public Switched Telephone Network (PSTN).

Network-to-Network Gateways

Numerous initiatives are already underway to put into effect short-term integration technologies that provide a reasonable level of interoperability among disparate networks.

Network-to-network gateways provide radio interoperability during missions that require communications between diverse organizations using different systems and technologies across multiple frequency bands. Network-to-network gateways offer a standard way to link wireless infrastructures. These gateways are usually at fixed locations and often support the transmission between participating systems or more advanced features such as unit ID. As repeater gateways, many of these gateways allow access to disparate systems via the PSTN, as well as to allow data sharing.

Minimum specifications have been developed for instances where gateway solutions, either cross band/in-band or network-to-network, are to be placed in effect. Where such interconnect devices are to be used, the following specifications should be followed:

- **Operating Modes**
 - The device must be able to retransmit the audio of radios that operate in different parts of the radio spectrum, use different modulation and access techniques, and use analog or digital encoding. The audio shall be distributed or switched throughout a shared audio distribution bus where it can be presented to and shared amongst all, or a selected subset, of radios interfaced to the device.
- **Capacity**
 - The device must support a minimum of four LMR radios in different operating modes. The ability to support cellular phones and the ability to connect to PSTN is desirable.
- **Power Sources and Physical Features**



- The device must be capable of being powered either from vehicular power, battery power, or portable AC power sources.
 - The device must accommodate being rack-mounted or standing alone in a portable enclosure. The device must be able to withstand shock and vibration typically encountered in field operations activity.
 - The device must include documented cable specifications for audio (speaker and microphone) and control (push-to-talk, or PTT) in order to interface with the basic audio and transmit controls for standard off-the-shelf LMR manufacturers' subscriber units. Such units are typically employed by emergency responders.
 - The device must have input mechanisms or modules that can support balanced or unbalanced two- or four-wire circuits.
 - The device must have input mechanisms or modules that can transmit (TX) audio, receive (RX) audio, PTT, and Carrier Operated Relay/Carrier Operated Squelch (COR/COS) signaling. The ability for supporting Tone Remote Control (TRC) and Voice Operated Transmit (VOX) signaling is desirable. Further, some form of adjustable automatic gain control should be provided for each device interface.
- Control and Administration
 - The device must provide local control to establish two or more talk groups of the radios or phone interfaces that are provided.
 - The device must provide adjustable audio/PTT delay to the radio interfaces to accommodate unknown repeater operating parameters such as hang times and squelch trails.
 - The device must be easily configurable with short setup times.

Console Interfaced Gateways

Similar to fixed network-to-network gateways, some consoles provide similar support either manually or electronically.

Console interfaced gateways (i.e., "patches") route audio signals from one channel or system to other channels or systems through a dispatch console, either by dispatcher intervention or by a pre-wired configuration through the console electronics, thereby supporting direct connections between disparate systems.

Shared Networks

Many states and regions have significant investments in large-scale, shared networks. These networks offer a high degree of interoperability within their geographic coverage areas, and can be linked to other networks through network-to-network gateways. Some of these networks meet the P25 suite of standards.

Shared networks have common backbone infrastructures and interfaces. These are often single-vendor solutions covering large geographic areas or commercial networks. The typical model calls for participating jurisdictions to purchase subscriber radios compatible with the network and to pay a monthly service fee.



E – ADDITIONAL RESOURCES

The following Web sites provide additional information for applicants to construct their grant applications and to seek funding sources.

Association of Public Safety Communications Officials – International, Inc. (APCO). APCO is the world's oldest and largest not-for-profit professional organization dedicated to the enhancement of emergency response communications.

<http://www.apcointl.org/>

Bureau of Justice Assistance Local Law Enforcement Block Grants (LLEBG). Funds from the LLEBG program may be used for procuring equipment, technology, and other material directly related to basic law enforcement functions.

<http://www.ojp.usdoj.gov/BJA/>

CommTech (Communications Technology, formerly AGILE). The CommTech Program within the Office of Science and Technology at the National Institute of Justice (NIJ) has a mission to assist state and local law enforcement agencies to effectively and efficiently communicate with one another across agency and jurisdictional boundaries. It is dedicated to studying interoperability options and making valuable information on that issue available to law enforcement, firefighters, and emergency technicians across the country.

<http://www.ojp.usdoj.gov/nij/topics/commtech/>

Grants.Gov

Grants.gov is a web resource providing a single access point for all grant programs offered by the Federal government. State and local agencies can find and apply for relevant grants at this site.

<http://www.grants.gov/>

Justice Technology Information Network (JUSTNET). The official Web site for the Justice Technology Information Network under the National Law Enforcement and Corrections Technology Center, JUSTNET lists many grants and funding sources. It also contains various publications on communications interoperability issues.

<http://www.justnet.org/>

National Incident Management System (NIMS). NIMS, created by the Department of Homeland Security, is the Nation's first standardized management plan that creates a unified structure for Federal, state, and local lines of government for incident response.

<http://www.fema.gov/emergency/nims/>

National Information Exchange Model (NIEM). NIEM is a partnership of the U.S. Department of Justice and the Department of Homeland Security. It is designed to develop, disseminate, and support enterprise-wide information exchange standards and processes that can enable jurisdictions to effectively share critical information in emergency situations, as well as to support the day-to-day operations of agencies throughout the nation.

<http://www.niem.gov/>

National Institute of Justice (NIJ). NIJ is the research and development agency of the U.S. Department of Justice. It is the only Federal agency solely dedicated to researching crime control and justice issues. Its Web site lists the most recent solicitations issued by NIJ.

<http://www.ojp.usdoj.gov/nij/>



National Public Safety Telecommunications Council (NPSTC). NPSTC is a federation of associations representing government telecommunications and security matters related to the public. NPSTC serves as a resource and advocate for public safety telecommunications issues.

<http://www.npstc.org/index.jsp>

National Telecommunications and Information Administration (NTIA). NTIA, an agency of the Department of Commerce, works to spur innovation, encourage competition, help create jobs, and provide consumers with more choices and better quality telecommunications products and services at lower prices.

<http://www.ntia.doc.gov/>

Office of Community Policing Services (COPS) Interoperable Communications Technology Program. The COPS Interoperable Communications Technology Program provides funding to help communities develop effective interoperable communications systems for public safety and emergency services providers.

<http://www.cops.usdoj.gov/>

Office of Grants and Training. The Office of Grants and Training (G&T) is a component of the U.S. Department of Homeland Security's Preparedness Directorate. It is responsible for preparing the nation against terrorism by assisting states, local and tribal jurisdictions, and regional authorities as they prevent, deter, and respond to terrorist acts. G&T provides a broad array of assistance to America's first responders through funding, coordinated training, exercises, equipment acquisition, and technical assistance. Specifically, G&T administers the Homeland Security Grant Program.

<http://www.ojp.usdoj.gov/odp/>

Office of Justice Programs (OJP) Information Technology Initiatives. The OJP Information Technology Initiatives Web site offers access to timely and useful information on the information sharing process, initiatives, and technological developments. The funding section of this site provides information on both Federal and private funding sources, examples of innovative funding ideas, and tips on researching funding legislation.

<http://www.it.ojp.gov/>

Office of National Drug Control Policy, Counterdrug Technology Assessment Center (CTAC) Technology Transfer Program. The CTAC Technology Transfer Program assists state and local law enforcement agencies in obtaining the necessary equipment and training for counterdrug deployments and operations.

<http://www.whitehousedrugpolicy.gov/>

Organization for the Advancement of Structured Information Standards (OASIS). OASIS is a not-for-profit, international consortium that drives the development, convergence, and adoption of e-business standards. The consortium produces more Web services standards than any other organization, along with standards for security, e-business, and standardization efforts in the public sector and for application-specific markets.

<http://www.oasis-open.org/>

SAFECOM Program. SAFECOM is the communications program of the Office for Interoperability and Compatibility (OIC) within the DHS. SAFECOM, with its Federal partners, provides research,



development, testing and evaluation, guidance, tools, and templates on communications-related issues.

<http://www.safecomprogram.gov/>

Technology Opportunities Program (TOP). The Technology Opportunities Program (TOP) of the National Telecommunications and Information Administration gives grants for model projects that demonstrate innovative uses of network technology.

<http://www.ntia.doc.gov/top/>

U.S. Department of Homeland Security (DHS). A cornerstone of the DHS philosophy is a commitment to partner closely with other Federal agencies, state and local governments, first responders, and law enforcement entities to ensure the security of the United States. Its Web site explains how DHS and local governments can work together.

<http://www.dhs.gov/>

U.S. Department of Justice (DOJ). DOJ offers funding opportunities to conduct research, to support law enforcement activities in state and local jurisdictions, to provide training and technical assistance, and to put into effect programs that improve the criminal justice system.

<http://www.usdoj.gov/>

U.S. Fire Administration Assistance to Firefighters Grant Program. The purpose of the program is to award one-year grants directly to fire departments of a state to enhance their abilities with respect to fire and fire-related hazards.

<http://www.usfa.fema.gov/fire-service/grants/afgp/grants.shtm>



F – FREQUENTLY ASKED QUESTIONS

What is SAFECOM?

What is SAFECOM's background?

Does SAFECOM provide funding for communications and interoperability?

What is SAFECOM's grant guidance?

What is the history of SAFECOM's grant guidance?

How has SAFECOM's grant guidance been used?

How is the FY 2007 grant guidance different from past versions?

How can agencies receive Federal funding?

What can grant funding be used for?

How much funding is available for interoperable communications?

How easy or difficult is it to obtain grants?

Does SAFECOM provide direction or advice for grant applicants?

What is Project 25 (P25)?

Does SAFECOM's recommended guidance allow for the purchase of equipment that is not P25-compliant?

With which standards in the P25 suite do equipment procurements need to comply?

Can grants be used to fund the purchase of interim interoperability solutions, such as gateways and backbone technologies to connect radio systems together?

Can grants be used to fund the purchase of equipment and interoperability solutions that operate in the public safety radio bands other than 700 MHz?

Who should be involved in interoperability coordination efforts?

Why has the grant guidance included the recommendation that states develop and adopt statewide plans?

Will statewide plans be evaluated?

Does SAFECOM evaluate grant applications?

How were the functional requirements that are contained within the grant guidance developed?



What is SAFECOM?

The Department of Homeland Security's (DHS) SAFECOM program is creating the capacity for increased levels of interoperability by developing tools, best practices, and methodologies that emergency response agencies can put into effect immediately, based on practitioner feedback.

With its Federal partners, SAFECOM provides research, development, testing and evaluation, guidance, tools, and templates on communications-related issues to local, tribal, state, and Federal emergency response agencies. The scope of the community SAFECOM services is broad, and includes more than 60,000 local and state emergency response agencies and organizations. Federal customers include agencies engaged in emergency response disciplines—law enforcement, firefighting, public health, and disaster recovery—and agencies that provide funding and support to local and state emergency response organizations.

A communications program of the Office for Interoperability and Compatibility (OIC), SAFECOM is managed by the Science and Technology (S&T) Directorate.

What is SAFECOM's background?

SAFECOM was established by the Office of Management and Budget and approved by the President's Management Council as an e-Government initiative in 2002. The program was created to coordinate all Federal efforts related to communications interoperability.

- SAFECOM was originally managed by the Federal Emergency Management Agency (FEMA), and was then transferred in 2003 to the DHS Science and Technology Directorate.
- In 2004, the Intelligence Reform and Terrorism Prevention Act (Public Law 108-458) established OIC and placed SAFECOM under OIC.

Does SAFECOM provide funding for communications and interoperability?

SAFECOM is *not* authorized to provide funding for communications equipment. Although SAFECOM does not provide funding, it does provide coordinated grant guidance to maximize the efficiency and effectiveness with which emergency response communications and interoperability grant dollars are allocated and spent. More information about finding and applying for DHS grant funding is available at <http://www.dhs.gov/xopnbiz/grants/>. Information about finding and applying for grants from all Federal agencies is available at <http://www.grants.gov/>.

What is SAFECOM's grant guidance?

In FY 2003, SAFECOM developed coordinated grant guidance to maximize the efficiency and effectiveness with which emergency response communications and interoperability grant dollars are allocated and spent. The guidance outlines recommended grant funding eligibility—including applicants and activities, application criteria, guidelines, and resources—to assist the emergency response community in strengthening interoperability. SAFECOM's grant guidance represents the first time every communications-related grant agency in the Federal Government has incorporated the same criteria for agencies receiving Federal funds for interoperable communications.

The guidance is available at <http://www.safecomprogram.gov/SAFECOM/grant/default.htm>.

What is the history of SAFECOM's grant guidance?

Over the past three years, Federal agencies—principally DHS—have provided grants to local and state emergency response agencies, more than \$2 billion of which has been used for interoperable communications. In FY 2003, SAFECOM developed coordinated grant guidance with input from the emergency response community. The purpose of the grant guidance is to maximize the efficiency and effectiveness with which emergency response communications and interoperability



grant dollars are allocated and spent. Each year, SAFECOM updates its grant guidance to accommodate for changes in technologies, standards, and other conditions affecting the emergency response community.

How has SAFECOM's grant guidance been used?

Since its creation, SAFECOM's grant guidance has been incorporated in grant awards from the Office of Grants and Training (G&T), FEMA, as well as the Department of Justice's (DOJ) Office of Community Oriented Policing Services. SAFECOM is working with the Department of Commerce's National Telecommunications and Information Administration (NTIA) to incorporate SAFECOM's grant guidance into NTIA's new interoperable communications grants.

Federal grant programs providing funding for interoperable communications can leverage grant guidance by including SAFECOM's recommended grant criteria in their grant application packages. Grant applicants can use the recommended criteria as they apply for interoperable communications funding. Identified tools and resources assist grant applicants in their interoperable communications activities.

How is the FY 2007 grant guidance different from past versions?

SAFECOM recently updated its grant guidance tool. The updated grant guidance features a new organizational structure aimed at improving the tool's clarity and accessibility, and new content that captures lessons learned:

- *Organizational Structure.* SAFECOM reorganized the guidance to clarify the recommended criteria contained within the guidance. The new structure provides users with a clear explanation of the recommended, eligible applicants and activities.
- *Content.* Updated content incorporates lessons learned and best practices to help the emergency response community strengthen interoperability through procurement decisions and statewide planning. The document includes new information on:
 - Project 25 (P25), and methods for ensuring equipment purchases comply with the standard
 - Recommended standards for data-related information sharing systems
 - Statewide planning criteria for developing comprehensive statewide plans
 - Capabilities assessment criteria for ensuring that technical assessment recommendations meet the needs of multi-jurisdiction emergency responses
 - Functional requirements for communications equipment that are aimed at informing procurement decisions
 - Tools and resources available to grant applicants to assist them in meeting recommended criteria

How can agencies receive Federal funding?

Each year, Congress appropriates billions of dollars to state and local agencies through Federal grant programs. State and local agencies can find and apply for this funding at Grants.gov (<http://www.grants.gov>). Grants.gov is a web resource that provides agencies with a single access point for all grant programs offered by the Federal Government. Each individual grant program has specific application, eligibility, and award requirements defined by or left to the discretion of the Federal agency through statute. State and local agencies should adhere to these requirements when applying.

Over the past three years, Federal agencies—DHS, DOJ, Departments of Commerce and Transportation—have provided grants to local and state emergency response agencies. The



eligible activities for which grant funding may be used varies from program to program. Information about finding and applying for grants from all Federal agencies is available at <http://www.grants.gov/>.

What can grant funding be used for?

Some programs permit agencies to use funding only for equipment purchases. Other programs permit agencies to use funding for a broad range of interoperable communications activities. A number of factors—governance, standard operating procedures, technology, training and exercise, and usage of interoperable communications—are critical to interoperability progress. As such, while it is important that grant applicants seek funding for equipment purchases, it is also crucial that applicants obtain funding for other critical, related interoperable communications activities.

Program funding from the Homeland Security Grant Program, managed by the DHS G&T, has made possible a broad range of interoperable communications activities, including planning, organization, training, and exercises. Information on this grant program, as well as others offered by DHS, can be found <http://www.dhs.gov/xopnbiz/grants/>.

How much funding is available for interoperable communications?

Funding varies from year to year, depending on appropriations from Congress. Since September 11, 2001, DHS G&T has provided more than \$2 billion in grants for interoperable communications.

How easy or difficult is it to obtain grants?

The ability to obtain grants is based on the needs of the applicant and the availability of funds. DHS encourages all eligible groups to apply for grants, including funding to enhance the capacity of state and local jurisdictions to prevent, respond to, and recover from incidents of terrorism involving chemical, biological, radiological, nuclear, or explosive weapons and cyber attacks.

Does SAFECOM provide direction or advice for grant applicants?

SAFECOM's grant guidance provides the emergency response community with resources to assist in developing comprehensive grant applications for communications and interoperability-related funding.

It is important that grant applicants adhere to the respective grant program's criteria and requirements. Applicants should also recognize that all grant packages are different, and that most grant program application criteria change from year to year.

What is Project 25 (P25)?

P25 is a suite of eight standards intended to help produce equipment that is interoperable and compatible regardless of manufacturer. The P25 suite of standards involves digital Land Mobile Radio (LMR) services. It includes the following standard interfaces:

- Common Air Interface (CAI)
- Fixed/Base Station Subsystem Interface (FSSI)
- Inter Radio Frequency Subsystem Interface (ISSI)
- Console Subsystem Interface (CSSI)
- Data Network Interface
- Network Management Interface
- Telephone Interconnect Interface
- Subscriber Data Peripheral Interface



At the request of Congress, SAFECOM is working with the National Institute of Standards and Technology and DOJ to develop and implement a compliance assessment program to validate that P25 standardized systems are indeed P25-compliant, and that equipment from different manufacturers can interoperate. This is to ensure that Federal grant dollars are used appropriately.

P25 standards are constantly being defined and updated based on the efforts of the P25 working groups and steering committee.

Does SAFECOM's recommended guidance allow for the purchase of equipment that is not P25-compliant?

Yes. SAFECOM's recommended guidance does allow for the purchase of equipment that is not P25-compliant, provided there are compelling reasons for using other solutions. SAFECOM recommends that agencies requesting funding to replace or add radio equipment to an existing system that is not P25-compliant (i.e., procurement of new portables on an existing analog system) can be considered. The requirement is providing an explanation for how the agencies' radio selections will allow for improving interoperability or eventual migration to interoperable systems. However, SAFECOM discourages the procurement of a new system that is not P25-compliant. Absent these compelling reasons, P25-compliant equipment will be preferred for Land Mobile Radio (LMR) systems.

With which standards in the P25 suite do equipment procurements need to comply?

Equipment procurements should comply with the relevant and completed standards within the P25 suite. Updated information on completed P25 standards and compliance requirements is available at <http://www.safecomprogram.gov/SAFECOM/grant/default.htm>.

Can grants be used to fund the purchase of interim interoperability solutions, such as gateways and backbone technologies to connect radio systems together?

Yes, fund requests should not be limited to the purchase of new radios. Grant applicants are also encouraged to pursue current and next generation interoperability solutions, such as gateways and backbone technologies that connect existing radio systems. These technologies may include, but are not limited to, Internet Protocol (IP) based solutions. These solutions may provide interim or long-term interoperability capabilities that obviate the need for new equipment or systems, and their implementation should not require the acquisition of new, non-P25 systems. Absent compelling reasons for using other solutions, communities considering new radio or system acquisitions are expected to migrate to P25-compliant equipment.

Can grants be used to fund the purchase of equipment and interoperability solutions that operate in the public safety radio bands other than 700 MHz?

Yes, the purchase of equipment and interoperability solutions is not limited to the 700 MHz band. Agencies should carefully consider and select equipment and solutions that provide the best fit within their current and longer-term radio system architectures, and that provide optimal interoperability for their geographic area. Careful transition planning to new equipment and solutions is extremely important.

Who should be involved in interoperability coordination efforts?

Interoperability coordination efforts should be multi-jurisdictional and multi-disciplinary. Representatives from emergency response organizations across all levels of government should



be involved in interoperability planning, as identified by communications needs. Because it is important to identify when and why specific agencies are involved in planning efforts, communities should develop a list of participating agencies and a list of agencies that are not included in particular planning efforts.

Below is a list of agencies that may be considered for involvement in coordination efforts. This list is not exhaustive. Rather, it is a starting point for communities to begin considering organizations beyond widely recognized emergency response agencies, e.g., emergency medical services (EMS), fire response, and law enforcement.

- EMS
- Fire response
- Law enforcement
- Emergency management
- Public works
- Public health
- Utilities
- Transportation
- Tribal government
- Tribal law enforcement
- Disaster relief agencies
- Elected government officials
- Media
- National Guard
- Federal agencies that respond in your area

Why has the grant guidance included the recommendation that states develop and adopt statewide plans?

It has become increasingly clear to the emergency response community that communications interoperability cannot be solved by any one organization. The solution requires a partnership among emergency response organizations across all levels of government. State and local governments can play a central role in this solution by preparing comprehensive and integrated statewide plans that address the specific interoperability issues across emergency responder disciplines and jurisdictions. Because statewide planning is critical to ensuring strategic-cross jurisdictional and cross-disciplinary coordination, the FY 2007 Homeland Security Grant Program requires the development and adoption of statewide plans as a condition of receipt of funding.

SAFECOM, in cooperation with input from local and state practitioners, has compiled and published criteria that will assist states in developing a comprehensive statewide plan. The criteria recommend a practitioner-driven approach involving local, tribal, state, and Federal stakeholders. The use of a practitioner-driven approach in a statewide strategic planning process will ensure that the perspectives of all emergency responders are included in the plan. In addition, this approach will ensure that states have comprehensive strategies for improving interoperability that take into account end-user needs.

Will statewide plans be evaluated?

When submitted to G&T as part of the requirement contained within the FY 2007 Homeland Security Grant Program, statewide plans will be evaluated by peer review panels.



Does SAFECOM evaluate grant applications?

SAFECOM does not evaluate or make decisions on grant applications. The Federal agency managing the grant program performs application evaluations.

How were the functional requirements that are contained within the grant guidance developed?

The functional requirements listed in the appendix of SAFECOM's grant guidance represent a compilation of different efforts defining functional requirements for emergency response communications. The appendix represents the InterAgency Board Standardized Equipment List, the P25 Statement of Requirements, and SAFECOM's Public Safety Statement of Requirement